Message

**From:** d'Almeida, Carolyn K. [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=9EC4401AFA1846DD93D52A0DDA973581-CDALMEID]
**Sent:** 4/18/2017 11:02:55 PM
**To:** Henning, Loren [Henning.Loren@epa.gov]
**Subject:** FW: Time of Remediation Estimates for EBR
**Attachments:** TOR Estimates_ST012_041717.pdf

fyi

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"Because a waste is a terrible thing to mind…"

-----Original Message-----
From: Bo Stewart [mailto:Bo@praxis-enviro.com]
Sent: Tuesday, April 18, 2017 2:49 PM
To: Steve Willis <steve@uxopro.com>; Wayne Miller <Miller.Wayne@azdeq.gov>; Jennings, Eleanor <Eleanor.Jennings@parsons.com>; d'Almeida, Carolyn K. <dAlmeida.Carolyn@epa.gov>; Davis, Eva <Davis.Eva@epa.gov>; Dan Pope <DPope@css-inc.com>; Brasaemle, Karla <KBrasaemle@TechLawInc.com>; Cosler, Doug <DCosler@TechLawInc.com>
Subject: Time of Remediation Estimates for EBR

Hi All,

Steve asked me to go ahead and forward the attached memorandum. The memo describes modeling and calculations for the time to attain RAO-like results (averaged over the NAPL source zones) using EBR. The approach is similar to Doug's in his spreadsheet. The model description and mathematical equations (Appendix B) were reviewed by Michael Brooks at EPA ORD (excluding the Monod kinetics) when it was used in the FFS at the McCormack & Baxter Superfund site in 2014. It was also used for the FFS at the Wyckoff Superfund site. I had to add the Monod kinetics to make it applicable to EBR at ST012.

The model is only applied to the EBR targets defined in the Amec Worksheets for the NAPL remaining (LNAPL Volume Calcs Printable_Rev_030317). No attempt was made to evaluate the TTZ/TIZ since no viable mass estimate exists for the residual NAPL remaining after SEE.

For the assumed field conditions and the underlying model assumptions for Monod kinetics, the range of estimates for the LSZ is 8 to 23 years.
The calculated range for the UWBZ is 92 to 136 years. Allowing undefined improvements to yield a 10-fold increase to the utilization rates in the UWBZ resulted in a calculated range of 17 to 43 years.

Bo

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